Circular No. 701

May 1944 • Washington, D. C.

UNITED STATES DEPARTMENT OF AGRICULTURE

Hog-Housing Requirements

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CONTENTS

MANY FARMERS will find it necessary to improve or replace some of their buildings either during or soon after the war. The production of food in time of war has increased wear and tear on farm buildings, but needed repairs and improvements have had to be deferred on account of shortages of building materials, labor, and equipment. As a guide to the selection and construction of satisfactory types of farm buildings, the United States Department of Agriculture is preparing descriptions of the functional requirements of buildings to house the principal kinds of livestock. This circular, on hog houses, is the first of a series.

[1] The preliminary draft of this bulletin was prepared by the late M. A. R. Kelley, agricultural engineer, Division of Agricultural Engineering, Bureau of Plant Industry, Soils, and Agricultural Engineering; J. H. Zeller, of the Bureau of Animal Industry; and L. G. Allbaugh and J. L. Strahan, of the Farm Security Administration.

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SOURCES OF INFORMATION

So far as possible, the requirements for housing hogs are stated in this circular in terms of space to be provided or function to be performed and do not specify the use of any particular material. It is expected that many of the new methods of using materials developed for war will find application in the farm-building field.

The design of farm buildings for hogs involves a number of technical problems on which basic information is lacking. On such points this circular presents a summary of opinions of swine specialists and building specialists of the State agricultural colleges and of the United States Department of Agriculture. The State specialists, however, should not be held responsible for any of the recommendations that may not appear applicable in their respective States.

THE HOG AND ITS HABITS [2]

Because hogs are short-haired they huddle together when cold. The hog carries its head low and eats, breathes, and drinks close to the ground. It tends to keep its bed clean. Mature females normally produce 2 litters of young annually, the litters averaging 9 or 10 pigs. The hog's snout is powerful and for this reason structures for hogs must be substantial. Its hoofs are small and readily penetrate soft earth. Its belly clearances are small, especially for sows as farrowing approaches. Swine seek sleeping environments that are cool in summer and warm in winter. Some of the principal swine diseases influenced by housing and sanitation are cholera, tuberculosis, pneumonia and pleurisy, flu, anthrax, brucellosis, swine enteritis (dysentery), swine erysipelas, sore mouth, skin troubles (parasitic), and internal parasites (worms).

DISTRIBUTION OF HOGS IN THE UNITED STATES

Table 1 shows the distribution of hogs in the United States. Although almost 60 percent of the hog population is in the North Cen-

TABLE 1.—*Distribution of hogs by geographic regions, April 1, 1940*

Region	Total number of farms	Sows to farrow		Hogs and pigs over 4 months old	
		Farms reporting	Number	Farms reporting	Number
New England	135,190	5,383	24,524	24,346	145,883
Middle Atlantic	348,100	46,113	121,134	129,605	834,250
East North Central	1,006,095	2,264,083	2,264,083	639,405	8,784,060
West North Central	1,090,574	609,856	3,640,046	761,121	11,511,942
South Atlantic	1,019,451	250,847	574,124	694,130	3,594,120
East South Central	1,023,349	245,170	479,007	721,501	3,693,329
West South Central	964,370	243,546	541,145	626,518	3,806,211
Mountain	233,497	57,788	175,067	103,068	771,260
Pacific	26,173	36,078	168,511	66,981	896,178
Total	6,096,799	1,987,723	7,987,641	3,766,675	34,037,253

tral States, Iowa alone having one-seventh of all, there are enough in every area to make their housing an important problem.

[2] Adapted from notes on swine-production structures by H. B. Walker, of the Department of Agricultural Engineering, University of California.

FUNCTIONS OF A HOG HOUSE

A good hog house should—

1. Provide pens, floors, walls, ceilings, and equipment that can be cleaned so as to prevent disease and to control parasites.
2. Provide adequate space for the animals.
3. Protect the animals from cold, wind, rain, and snow and from excessive summer sunshine.
4. Maintain air temperature, humidity, and air movement within limits conducive to the health and comfort of the animals.
5. If a central house, have adequate light for performance of work.
6. Provide for safety of the animals and of persons, both from injury by animals and by contact with the structure.

Facilities for feeding and watering the animals, with a minimum expenditure of the farmer's time and energy, should be provided either in the hog house or nearby.

BUILDING REQUIREMENTS AS MODIFIED BY CLIMATE

Variations in climate in the different parts of the United States affect the design of hog houses, as will appear in the discussion of space requirements and building details. Figure 1 shows for each locality the average of the lowest temperature recorded each winter from 1895 to 1922, and figure 2 the average hours per day of winter sunshine. In the South average winter temperatures are about 30° higher than the average annual minimum; in the North they are about 40° higher. Along the coasts the difference is less. The temperature changes with the altitude, dropping about 1° for each 400-foot rise.

In the northern areas there are periods of several days or weeks when the weather is too severe for animals to be outdoors. Where the number of hours of sunshine is greater, doors and windows may be opened more freely and livestock may run outdoors during the day. In the Southeastern States and along the west coast, winter temperatures are moderate and animals can be outdoors much of the time, but must have shelter from cold rains and winds. In the extreme South, protection against parasites and disease is more important than protection against cold.

In hot weather hogs suffer severely from heat and it is necessary to supply them with shade. Many farmers provide wallows where the hogs can lie in water.

WATER REQUIREMENTS

Clean water should be accessible for hogs at all times, particularly in warm areas. The quantity consumed daily ranges from ½ gallon for the 25-pound pig to 1½ gallons for the 175- to 200-pound hog. A nursing sow may need 2 to 2½ gallons daily per hundredweight. In general, the requirements of water may be ½ to 1½ gallons per 100 pounds of live weight. Automatic watering devices are highly desirable, but they must be protected from freezing. Water storage for washing floors and for mash feeds should be provided.

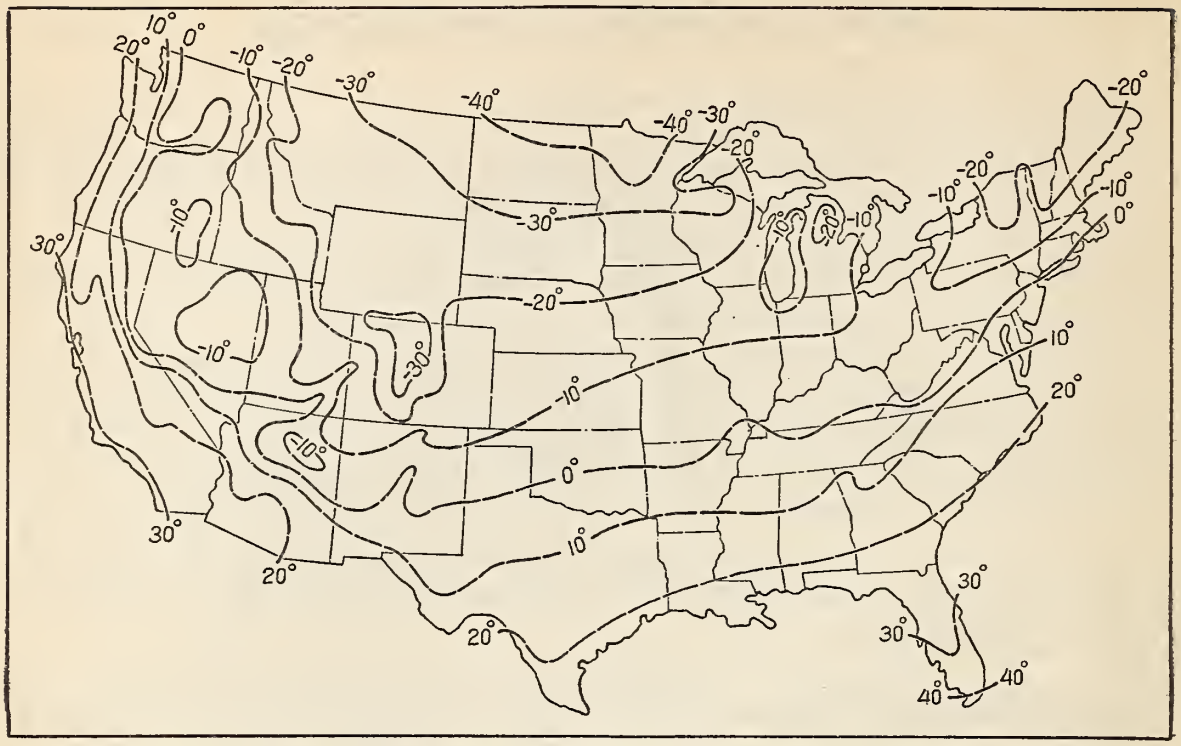

FIGURE 1.—Average annual minimum temperatures (° F.).

METHODS OF HOUSING HOGS

There are two general methods of housing hogs: (1) In movable or individual houses and (2) in central houses. Movable houses are used extensively in all zones because of their simplicity, low first cost per unit, and adaptability to a sanitation program. To avoid disease the individual house may be moved to clean ground and the sow placed in it either before or after farrowing. This has made the movable house a favorite in the South. The movable hog house may also be placed along a concrete feeding platform arranged to permit frequent cleaning and washing.

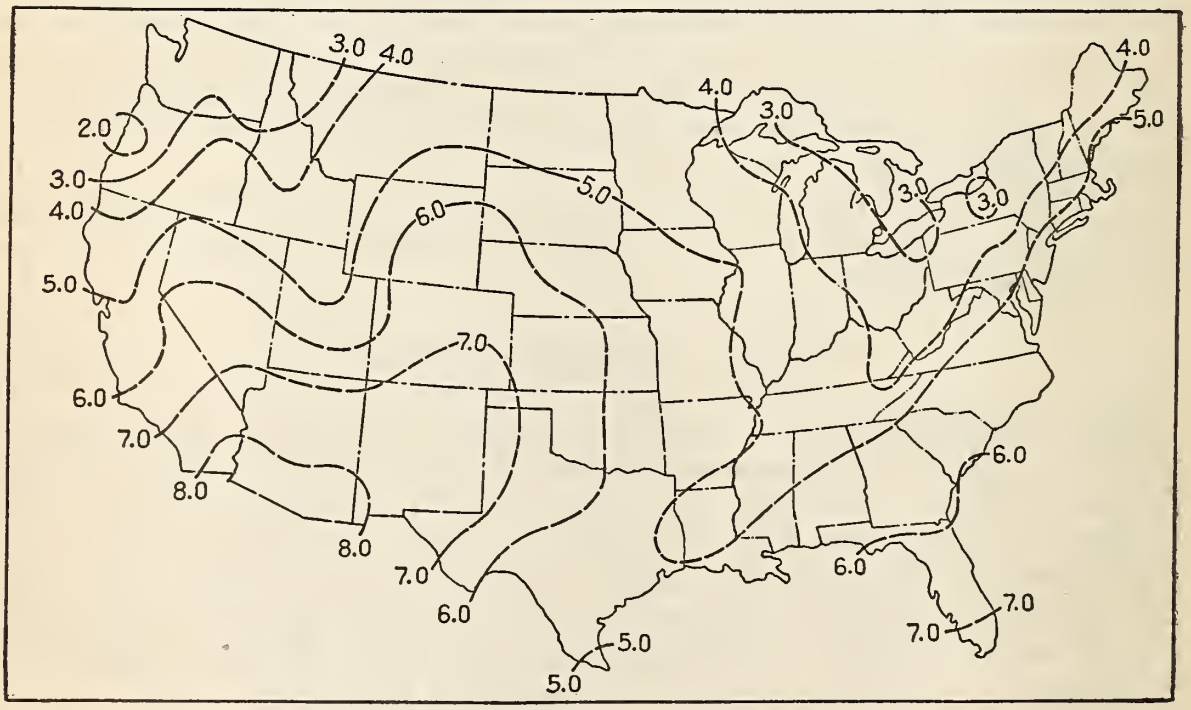

FIGURE 2.—Average number of hours of sunshine daily in winter (December to February).

Provision of a central house is largely determined by four factors, namely, size of enterprise, availability of labor, acres in pasture, and climatic conditions. Central houses are seldom provided for less than six sows. When a central house is used, it is especially necessary that a floor be provided and that all surfaces be of materials that can be kept clean and sanitary.

The practice of confining hogs on concrete is becoming popular in some sections. Some breeders follow this practice from birth to market, while others place the pigs on pasture during the suckling period and confine them on concrete from weaning to market weights. A paved feeding floor (see page 15), with good drainage and proper manure-handling facilities, is essential to help maintain sanitary conditions. Water under pressure should be provided.

Regardless of the type of house used, hog comfort, sanitation, and prevention of diseases are of major importance for success.

MOVABLE INDIVIDUAL HOUSES

When movable houses are used, consideration should be given to the selection of a well-drained site and to the lay-out of fences and roads; also to provisions for feeding, water supply, shade, and wallows, so as to minimize labor and to promote the comfort of the animals.

The type of construction of movable hog houses varies with local conditions and with individual preference. The principal variation is in roof styles, with side walls next. Box-type houses, similar to that shown in figure 3, shed-roof houses, and combination-roof houses are more serviceable but cost slightly more than the A-type house. Such houses are more easily cleaned than an A-type house of the same floor area and also permit the sow and litter greater freedom of movement. Box-type and shed-roof houses are also adaptable for other temporary off-season uses, such as for brooder houses or for grain or feed storage. Hinged sides provide additional shade and ventilation for hot weather, but cause more drafts during cold weather. They add to the cost and reduce the service life of the house. In the warmest areas the house may be enclosed on only three sides.

All movable houses should be well braced, to prevent being racked when moved from one place to another. The use of creosoted lumber, particularly for members in contact with the soil, lengthens the life of the house. Creosote treatment is particularly valuable in warm, damp areas, where untreated wood is relatively short-lived. Windows are of doubtful value in movable houses, since shuttered openings or doors may be opened on the sunny or leeward side at least for a short time each day. Small openings at the ridge for ventilation are recommended. These openings should be adjustable, particularly in cold climates. The box-type house with an 8- by 8-foot floor area and a 3-foot height of side wall is the most satisfactory size for sows weighing 350 pounds. Houses 7 by 8 feet may be used for sows under 350 pounds in weight. (See fig. 3.) Guardrails are needed, as described under Central Houses. The A-type house should be at least 8 by 8 feet by about 6 feet 6 inches to 7 feet high at the peak for average sows (fig. 4). At the back a guardrail should be provided.

Primary requisites in floor construction are durability and ease in cleaning. Removable floors have the advantages of lightness for

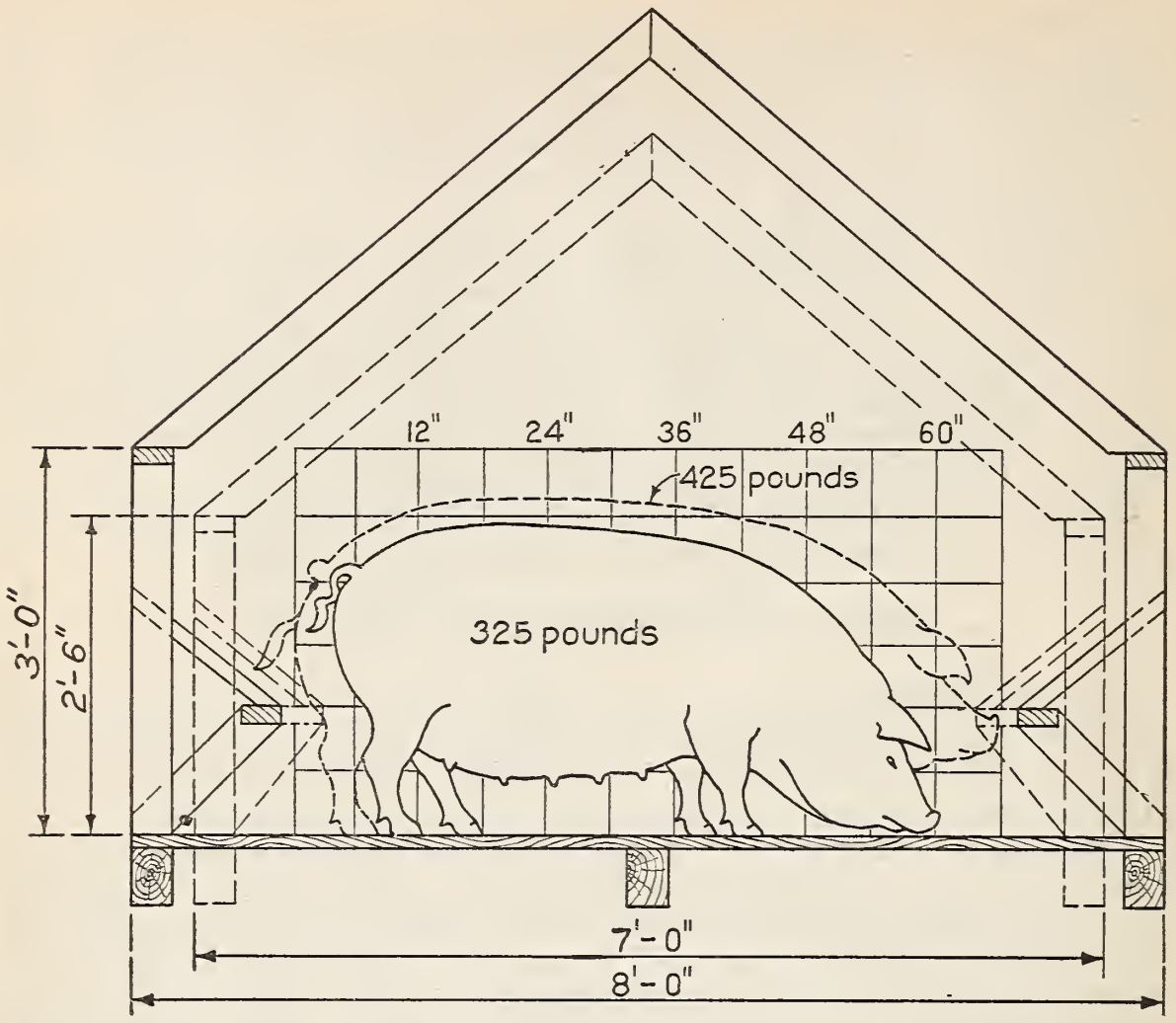

FIGURE 3.—Diagram showing dimensions of sows of two sizes in relation to a box-type house.

moving and of being easily cleaned. If the floor is more than 4 inches above the ground, a ramp should be provided to protect the sow from injury.

Plank floors, if well built, are serviceable and may be used to advantage, especially in damp areas. They should be of tongue-and-groove planking or of 12-inch plank with splines. Durability of planks is increased by treatment with creosote, though freshly creosoted floors may cause irritation of the skin of small pigs.

In areas that are dry and warm, earth floors, because of ground warmth, are recommended for movable houses. Crude oil sprinkled on the earth decreases trouble from dust. Treatment with asphalt hardens and helps to waterproof the earth surface. Because of the difficulty in maintaining sanitation, the use of earth floors should be limited to well-drained soils and to situations where sows are changed to new pastures frequently. If desired, removable wooden floors may be used at farrowing time.

Movable houses are usually constructed of only one thickness of boards and need additional insulation for winter warmth in cold climates. This is often provided by moving the houses close together in line, building a fence 12 to 18 inches away from the backs and sides of the group of houses, and piling straw over and around them or banking the houses with fodder or snow. For sanitary reasons, straw so used should be burned when warm weather comes.

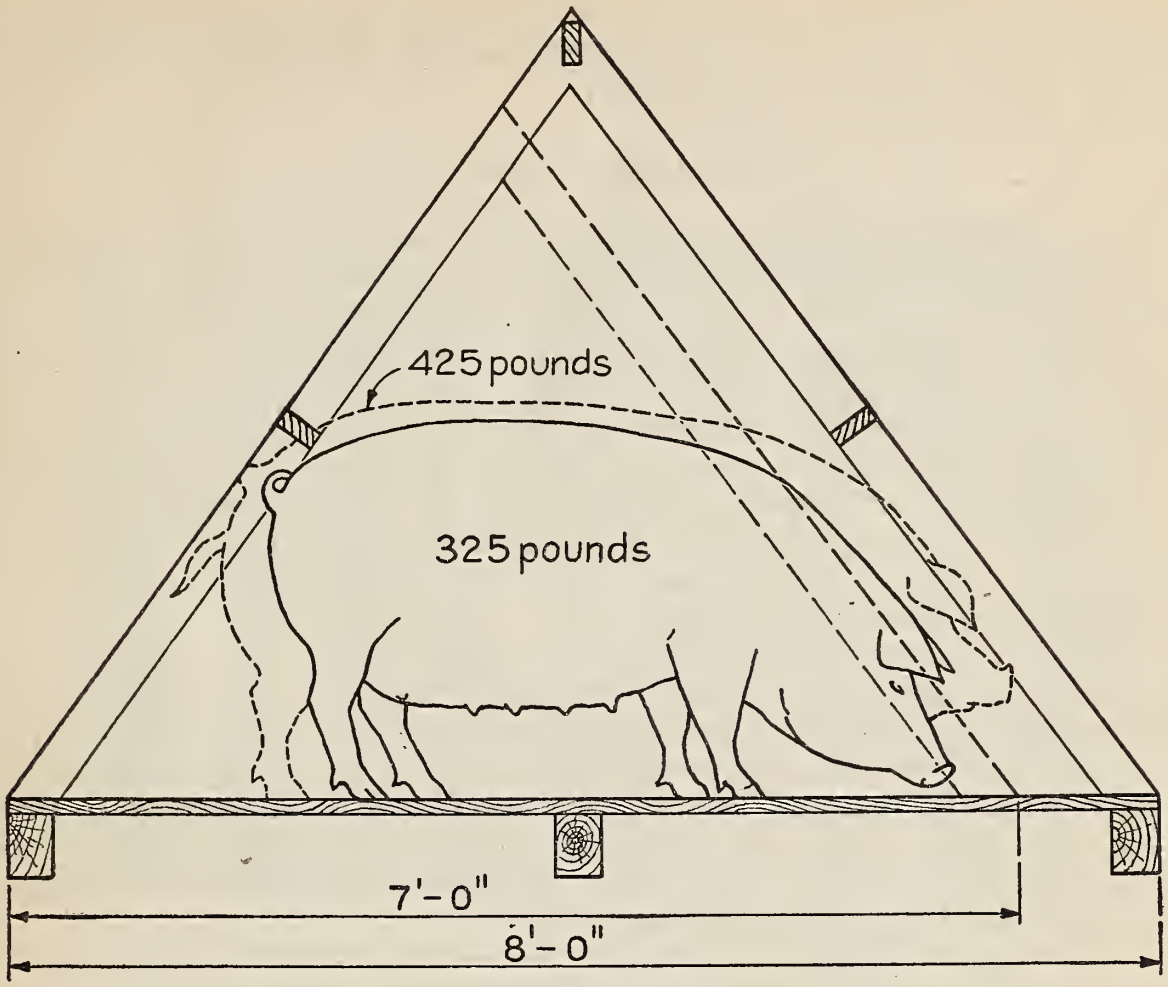

FIGURE 4.—Diagram showing space required by 325-pound and 425-pound sows in an A-type house.

CENTRAL HOUSES

When central houses are used, special consideration should be given to location and orientation of the building and to details of construction, including insulation and ventilation.

LOCATION OF A PERMANENT HOUSE

For the permanent type of hog house a well-drained site is particularly important. Grading the site to a uniform slope away from the house is advisable to provide adequate drainage. The location should be convenient with respect to corncrib, other feed storage, water, and pasture. The direction of the prevailing winds, which may carry odors toward the residence or dairy, should also be taken into consideration. Windbreaks in certain areas prevent deep snowdrifts and provide shade in summer. East and west facing (north and south axis) of windows in double-row houses is preferred by swine raisers in many localities, as it permits the passage of more cooling breezes through the house in summer. This placement also provides for sunshine in the east pens in the morning and in the west pens in the afternoon. In colder regions deep snows may prevent the use of outside pens for sunning the pigs, but the practice is highly desirable whenever possible. If the slope of site or the direction of prevailing winds requires that a double-row house be placed with axis east and west,

the larger number of windows should be on the south side. Houses with a single row of farrowing pens facing southward admit more sunshine than other arrangements.

Temperature in the House

For fattening hogs the temperature in the house should not drop below freezing at any time, and a minimum of 40° F. is desirable. In the farrowing house it is well to have the temperature in the range of 50° to 60°, since little pigs chill at lower temperatures. As it is not practicable without supplemental heat to keep the farrowing-house temperature above 50° in the coldest weather, in the colder areas farmers usually arrange for sows to farrow from the middle of March through April or May, and raise only one litter a year. Warmer houses would permit farrowing the first of March or the middle of February, with a second litter later in the year, as is the practice in the main hog-producing areas.

The use of brooders is very helpful in reducing the chilling of small pigs, and the popularity of this device is increasing. Pig brooders are on the market, and plans for home-made brooders are available from several of the State agricultural colleges and from the Rural Electrification Administration. In northern areas it is good practice to provide a chimney, so that in very cold weather a jacketed stove may be set in the alley or in a vacant pen. A thermometer should be kept in one of the colder parts of the house.

Ventilation

The capacity of the ventilation system should be based on the number of hogs that will be fattened in the house. (See table 2.) Electric fans or gravity systems of ventilation may be used. A fattening hog weighing 200 to 400 pounds may breathe out 4 to 6 pounds of moisture daily; also, some moisture is evaporated from wet floors, troughs, and other surfaces. Under most conditions in the northern hog-producing areas a ventilation rate of about 1,080 cubic feet of air per hour per 300-pound hog will be sufficient to remove this moisture and will require an outlet-flue area of about 20 square inches per hog for gravity ventilation.

Outlets three to five pens apart, with inlets at every other pen, on each side of a two-row house may be expected to give good results. Total inlet area may be somewhat less than total outlet area. Dampers should be provided on both outlets and inlets to control the volume of air circulated according to the conditions of the weather and the occupancy of the house. Inlets should be above the level of the pen partitions and have deflectors to diffuse cold air. Outlet ducts should be insulated their entire length, inlet ducts on the warm side. Flues that extend near the floor are in the way. Door and window openings will usually provide satisfactory ventilation in areas where the average annual minimum temperature (see fig. 1) does not fall lower than 10° F. Where there is much winter sunshine (see fig. 2), doors and windows provide satisfactory ventilation in areas of somewhat lower minimum temperature.

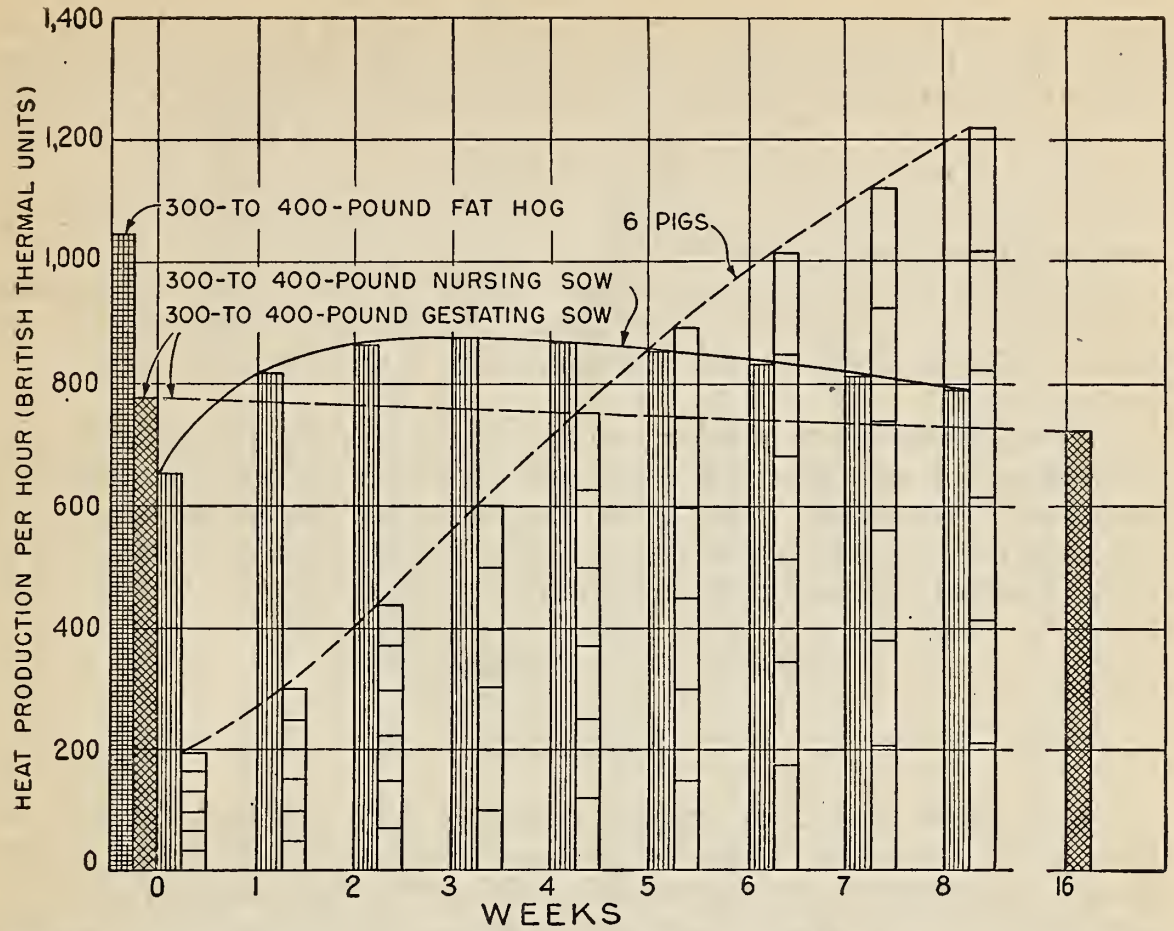

FIGURE 5.—Heat production of fat hogs, of brood sows during each week of the gestating and nursing periods, and of small pigs for each week of normal growth.

INSULATION

The first requirement for heat conservation in a hog house is tightness of construction in all details. Cracks in walls, floors, or roof or around doors or windows admit drafts, offset the effect of insulation, and result in losses of pigs. Leakage of cold air into insulated spaces may seriously reduce the warmth of construction. The use of fill insulation at the junction of the wall and roof or ceiling will reduce such infiltration.

Insulation has two major purposes: (1) To conserve heat, and (2), to reduce condensation within the house, especially on the ceiling.

A basis for calculating the amount of insulation needed in hog houses has not as yet been agreed upon, and the subject needs further investigation. The following procedure is suggested until more adequate data can be obtained.

(a) Base the design of winter insulation for a hog house on the number of stock hogs the building will accommodate. (See table 2.) In calculating heat losses use a 40° F. inside temperature and an outside temperature 10° above the average annual minimum (see fig. 1) in areas having an average of 3 hours of winter sunshine daily (see fig. 2); use 15° above the average annual minimum in areas having 5 hours, or 20° above the average annual minimum in areas having 7 hours in winter daily. Use the heat-production data [3] of figure 5, and assume

[3] MITCHELL, H. H., and KELLEY, M. A. R. ENERGY REQUIREMENTS OF SWINE AND ESTIMATES OF HEAT PRODUCTION AND GASEOUS EXCHANGE FOR USE IN PLANNING THE VENTILATION OF HOG HOUSES. Jour. Agr. Res. 56: 811–829, illus. 1938.

that 65 percent of the heat produced will be lost by ventilation. If the house is to be used for farrowing at a season when the average outside temperature is below 45°, provide for the use of pig brooders or a jacketed stove. The average temperatures for February are 30° to 45° and those for March 40° to 60° above the average annual minimum shown in figure 1. Consult weather records for actual temperatures for a particular locality.

(b) Unless very thick insulation is used, provide at least 25 percent more insulation value for the roof or the roof-ceiling combination than for the walls, so that if condensation occurs it will be on the walls, not above the pens.

(c) Provide a vapor barrier, such as shiny, heavily asphalted paper, roll roofing, or two coats of aluminum paint on the warm side of the insulation, to prevent wetting of insulation by the moist air of the house, and arrange for ventilation of the fill insulation to outside air.

(d) Protect insulation from damage by hogs.

SPACE REQUIREMENTS

Fattening

The recommended floor areas for shelter only, per hog, for pens of 10 or more fattening hogs are given in table 2 for fall and winter shelters in northern and southern areas. Pens for small numbers of hogs should allow more space per animal. Additional space should be added for exercising, if pigs are confined indoors or if self-feeders are used in the pens.

Table 2.—*Pen-space requirement per hog*

Weight of hogs (pounds)	Space per head in—		Weight of hogs (pounds)	Space per head in—	
	Cold areas	Warm areas		Cold areas	Warm areas
	Sq. ft.	*Sq. ft.*		*Sq. ft.*	*Sq. ft.*
100	5–6	6–9	300	11–14	15–22
200	8–10	10–15	500	16–20	20–30

Farrowing

A farrowing pen should be provided for each sow. Pens 7 by 8 feet may be used for sows under 350 pounds in weight. Pens 7 by 9, 8 by 8, or 8 by 9 feet are recommended for sows weighing 350 pounds or more. A 6-by-8-foot pen with good guardrails is regarded as the minimum for a small sow. For very large sows and for sows in warm areas, pens as large as 8 by 10 feet may be needed. The long dimension of the pen should be at right angles to the wall. The gates to the central alley and the doors to the outside run should be adjacent to the same partition at the corners of the pens; gates in opposite pens across the alley should be directly opposite each other.

Pens that are too small increase risk of loss of pigs, while pens of excessive size are hard to keep at a comfortable temperature in cold weather. The pig brooder, however, can be used more satisfactorily in

the larger pens. When pens are used as living quarters for sows and pigs for extended periods, modifications of these recommendations may be made to comply with the plan of management.

Boar Pens

Boar pens and outside runways should be somewhat larger than those provided for sows of equal weight.

Alleys

Central alleys should not be less than 4 feet wide. A 6-foot width is sometimes wanted to permit use of a hand truck. In central houses 40 feet or more in length an alley 8 to 10 feet wide permits entry of a manure spreader or truck, to facilitate cleaning out the house, which in turn promotes cleanliness and sanitation. Such an alley can be used for emergency pens or for exercising the sows, particularly in times of deep snow or inclement weather. Wide alleys, however, add more space to be heated and make the structure more likely to be drafty. Cross partitions at every fourth or fifth pen will reduce drafts in long houses.

Storage Space

The feed storage space desired will vary with the ration fed, size of herd, and management practices. In herds of only 6 or 8 sows, feed storage in the hog house proper is desirable, usually at the entrance end. Use of one pen space for feed storage is a common practice. Where herds are larger the main supplies of feed should be stored in a part of the hog house or other structure that can be ratproofed.

Because of the time and labor required in feeding hogs, convenient location of feed is an important item to be considered. An 8- by 16-foot storage room will provide space for 8 to 10 tons of feed in bins or sacks, but since many common hog rations have six or more ingredients, additional space will be needed for handling and mixing different feeds. One ton of feed should last 10 sows for 1 month. Some of the most convenient houses have loft storage for bedding as well as for feed, especially in the colder areas. Particular care should be taken to ratproof feed rooms and bins.

Outside Pens

An outside pen should be of the same width as an inside pen and may be 8 to 20 feet long. If the outside runs are to be used as a feeding floor, a length of at least 12 feet is desirable. Concrete paving provides for better sanitation.

BUILDING DETAILS

Floors

Regardless of materials used, the floor should be constructed for warmth and for freedom from dampness, excessive dust, or harmful

drafts. The floor should slope at the rate of one-fourth inch per foot to a shallow gutter at the edge of the central alley, to insure ease in cleaning. Gutter drains at every fifth pen are desirable. The floor surface should be even, to facilitate disinfecting and cleaning, but not smooth-finished as this may cause injury to sows. As sanitation is of prime importance, freedom from cracks and crevices is essential, so that floors may be thoroughly cleaned and disinfected.

Concrete floors are durable and easy to clean and disinfect. Their coldness can be minimized by the use of bedding, frequent changes of which help to avoid dampness. A sub-base of building tile, crushed rock, cinders, or gravel is recommended to break the capillary action of ground water. Damp floors are troublesome in hot damp climates, as well as in cold ones. A vapor and waterproof membrane, such as a layer of felt heavily mopped with hot asphalt, placed below the surface of the concrete increases the dryness and warmth of the floor. Removable board overlays are sometimes provided in farrowing pens.

Feed Troughs

For sanitary reasons all feed troughs should have smooth interior surfaces for ease in cleaning. When feed troughs are used, a minimum length of 10 inches should be allowed for each hog under 100 pounds live weight and 4 inches additional per hog for each increase of 100 pounds.

Pen Partitions

Solid partitions between pens reduce drafts, decrease disturbances among sows, and tend to decrease pig losses. They are particularly desirable in cold regions. In warm climates slatted partitions are used, since solid partitions do not permit free circulation of air. A sow is less likely to attempt jumping a solid partition 36 inches high than a slatted partition 42 inches high.

A 4- to 6-inch curbing 3 to 4 inches wide between inside and outside pens, with rounded corners to permit easy cleaning and disinfection, helps to prevent spread of disease. Removable partitions are desirable when the house or outside pens are to be used for other purposes during the off-farrowing season. In this case, the curb between pens will be objectionable, but this objection should be weighed against the possible spread of infection between pens if no curb is provided.

Guardrails

Guardrails should be provided on at least three sides of a farrowing pen. The outer edges should extend 8 to 12 inches from the side walls and there should be 8 to 10 inches clearance between the floor and the rail or more if much bedding is used. The guardrail may be movable or stationary, but must be substantial to avoid breakage and must be firmly fastened to the partition, preferably with the supports above the rail. When pig brooders are used, the guardrails are still needed.

Windows

Each pen in a farrowing house should have a window, with a minimum of 1 square foot of opening per 30 square feet of floor area. In cloudy areas of moderate temperature 1 square foot of opening to 15 square feet of floor area is not too much. If wood sash is used, it should be treated to resist moisture and rot. Metal sash should have a rust-inhibiting coating. Windows sheltered by eaves and hinged at the bottom to open inward give protection against entrance of rain and drafts.

The principal value of windows is to increase visibility within the house for the convenience of workmen and for the admission of sunshine during the day, but windows increase the loss of heat at night, and this is an important factor in colder areas. In sunny regions, daily opening of windows is practical much of the time. Wooden shutters may take the place of glass windows, being opened during the day and closed at night and during heavy rains or storms.

Skylights are difficult to construct and to keep tight, particularly under melting snows, and they allow condensed moisture to drip on the floor. For these reasons they are not recommended for use in the coldest areas. In warm areas they admit too much sunlight in summer and limit the use of the house for shade unless it is covered or whitewashed. If skylights are desired, only well-made, commercially fabricated sash of rust-resistant steel or treated wood should be used.

Storm Doors and Shutters

To conserve heat, storm doors and shutters may be effectively used on entrance doors and windows in areas having extreme winter weather. If desired, shutters may be on the inside, hinged to swing out of the way in the daytime.

Wall Height

The optimum air space per hog has not been determined experimentally, but experience shows the desirability of reducing the volume to a minimum in northern areas, in order to conserve the maximum of animal heat. In warm regions the walls should be high enough to permit free air circulation, so as to cool the house for summer use.

Houses with windows in side walls facing east and west require side walls 6 feet high. Ceilings add to warmth of construction. In the South, wall heights may be 8 or 8½ feet, and ceilings may be omitted, to permit a freer air circulation and a cooler house in summer.

The minimum height of wall for gambrel-roof construction with skylights is 3½ feet, and the maximum ceiling height over the central alley should be 7 to 7½ feet in areas where conservation of heat is important.

Roof Types

Shed, gable, gambrel, and combination roofs are used on central hog houses. Half-monitor and monitor roofs are no longer recommended.

Pen Doors

In cold areas doors of the minimum size for admitting the hogs are desirable. Width of door need not be over 2 feet for most hogs, but large sows weighing more than 400 pounds may require a door 2 feet 4 inches in width. A height of 2 feet 10 inches will admit hogs of all ordinary sizes, although 3 feet is desirable for large-type breeding animals. Inside and outside pen doors should be at corners of the pen and adjacent to the same partition. Vertical-lift outside doors are preferable to hinged doors.

Doorsills

The bottom of the entrance door should be enough higher than the outside ground to prevent the entrance of drainage water, especially when the ground is covered with ice or snow, but doorsills higher than 4 inches may cause injury to sows and pigs unless ramps are provided.

Lighting

Artificial lighting is needed mainly for feeding and cleaning and during farrowing season. A 60-watt lamp may be placed over the partition of each pair of pens, or for every three pens when the position of the lamps is alternate with that of lamps on the opposite side of the feed alley. All fixtures should be moistureproof and corrosion-resistant. If electric pig brooders are to be used, convenience outlets should be so placed that no long extension cords will be needed. The efficiency of lighting will be affected by the kind of partitions used—slatted or solid—and by the color and reflective properties of inside-wall and ceiling surfaces.

PERMANENT HOUSES FOR GROWING AND FATTENING PIGS

Where growing pigs are pastured, especially in northern areas, some type of shelter is desirable. Individual houses may be used, but as the pigs grow they require more space, to prevent crowding. A permanent house erected on the dividing fence of two pastures is convenient. A satisfactory building for such use may be about 10 by 32 feet, divided by a partition about 3 feet 6 inches high, and have concrete foundations and floor. Side walls should be about 3 feet 6 inches high; pen doors 2 feet wide, 2 feet 10 inches high in the side wall, one opening into each pasture. Doors in each end and in the partition are needed for the convenience of the attendant; sometimes small vent openings are provided along the side walls under the eaves. Two lots of pigs may be grown separately by keeping the partition door closed; one lot may have the run of both pastures when the door is open; or one lot may be confined to one pasture by closing the door, thus allowing the other pasture to be cultivated. In hot weather good ventilation can be obtained by keeping the end doors open. The space required per hog is indicated in table 2 (p. 10).

MISCELLANEOUS STRUCTURES

Feeding Floors

If feeding floors are used with self-feeders, a minimum of 8 to 10 square feet per pig is desirable, with additional space for shelter. In warm climates the minimum is increased to 10 to 12 square feet for summer feeding. Where self-fed hogs are confined on concrete, a minimum of 10 square feet per hog should be allowed, though some feeders consider that 15 square feet is about right. Where hogs are hand-fed, an area of 15 square feet is commonly used. These units are for hogs finishing at 250 pounds or less.

The feeding floor should not be too smooth, as it may become slippery when wet. Control of rats is important not only to prevent loss of feed but also as a measure of disease control. The foundation boundary walls should be extended about 12 inches below the ground, with a horizontal shelf protruding outward about 4 inches as a protection against rats burrowing beneath the floor.

Shade and Wallows

Shade in some form is an important adjunct to the successful raising of hogs in areas of high sun intensity. Trees provide good shade, and well-ventilated or open sheds are often adequate. For sanitary reasons movable shades are preferable in the hog lot, or temporary shelters made of poles covered with brush or straw that can be burned at the end of the season.

A shade 10 by 12 feet with a minimum height of 3½ to 4 feet will provide protection from the sun for eight to ten 200-pound hogs. In the South it should be at least 5 to 6 feet high, so that the sun can get to all parts of the ground during the day.

In areas of heavy rains, wide eaves and a ready means of disposing of run-off water are necessary. Shades made of fiber or grass crops rot quickly, and more permanent types of roofing must be considered in such places.

For sanitary reasons wallows should be lined with impervious, abrasion-resistant material and cleaned out from time to time. They should be near but not under a shade. Since not all hogs will remain in the wallow at one time, an area the same as that provided for shade will accommodate two or three times as many hogs.

Dipping Vats

The practice of using dipping vats is economical and convenient for large herds. Where small numbers of hogs are kept, it is more economical to crowd them into a pen and apply the oil or disinfectant by means of hand-spraying equipment.

Drawing No. 5621, showing a concrete dipping vat for hogs, which is being used with good results at the Beltsville Research Center, Beltsville, Md., is available through extension agricultural engineers at the State agricultural colleges.

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